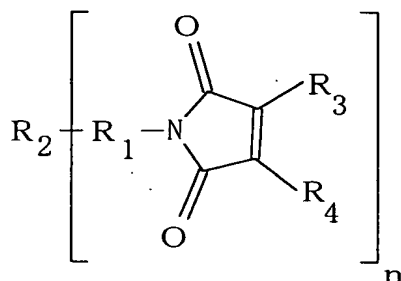


What is claimed is:

1. A material for photo-alignment layer, comprising a polymerizable monomer having at least one photo-alignment moiety, which carries out a photo-alignment function by the photo dimerization reaction, and at least two polymerizable maleimide groups per molecule.

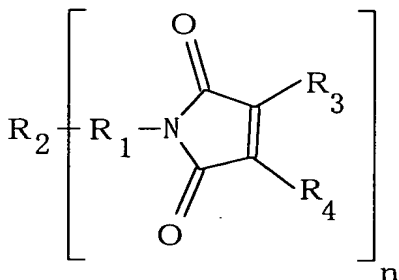
2. The material for photo-alignment layer according to claim 1, wherein the polymerizable monomer having a maleimide group is a compound represented by the general formula:



wherein  $R_1$  represents an alkylene group having 1 to 30 carbon atoms, a cycloalkylene group having 3 to 12 carbon atoms, or a group in which these 2 to 5 groups are combined via a single bond, an ester bond, an ether bond or a urethane bond;  $R_2$  represents a photo-alignment moiety selected from the group consisting of benzophenone group, cinnamoyl group, chalcone group and coumarin group;  $R_3$  and  $R_4$  each independently represents a hydrogen atom, an alkyl group having 1 to 8 carbon atoms, a phenyl group, or a halogen atom; and  $n$  represents an integer of 2 to 4.

3. A photo-alignment layer comprising a polymer of a polymerizable monomer having at least one photo-alignment moiety, which carries out a photo-alignment function by the photo dimerization reaction, and at least two polymerizable maleimide groups per molecule, the photo-alignment layer having the photo-alignment function carried out by photo dimerization of the photo-alignment moiety and a crosslinked structure formed by polymerization of the polymerizable maleimide group.

4. The photo-alignment layer according to claim 3, wherein the polymerizable monomer having a maleimide group is a compound represented by the general formula:



wherein  $R_1$  represents an alkylene group having 1 to 30 carbon atoms, a cycloalkylene group having 3 to 12 carbon atoms, or a group in which these 2 to 5 groups are combined via a single bond, an ester bond, an ether bond or a urethane bond;  $R_2$  represents a photo-alignment moiety selected from the group consisting of benzophenone group, cinnamoyl group, chalcone group and coumarin group; and  $R_3$  and  $R_4$  each independently represents a hydrogen atom, an alkyl group having 1 to 8

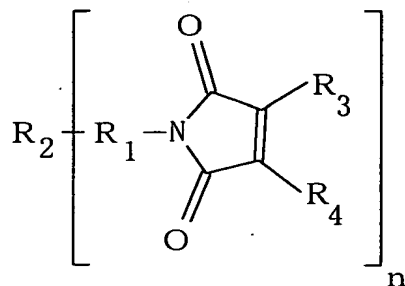
carbon atoms, a phenyl group, or a halogen atom.

5. A method of manufacturing a photo-alignment layer, which comprises coating a polymerizable monomer having at least one photo-alignment moiety, which carries out a photo-alignment function by the photo dimerization reaction, and at least two polymerizable maleimide groups per molecule on a substrate, and irradiating the coating layer to light to cause the photo dimerization reaction of the structural unit and the photopolymerization reaction of the polymerizable maleimide group, thereby to form a crosslinked polymeric layer and to enable the polymeric layer to carry out the photo-alignment function.

6. A method of manufacturing a photo-alignment layer, which comprises coating a polymerizable monomer having at least one photo-alignment moiety, which carries out a photo-alignment function by the photo dimerization reaction, and at least two polymerizable maleimide groups per molecule on a substrate, heating the coating layer to cause the thermal polymerization reaction, thereby to form a crosslinked polymeric layer, and exposing the polymeric layer to light to cause the photo dimerization reaction of the structural unit, thereby to enable the polymeric layer to carry out the photo-alignment function.

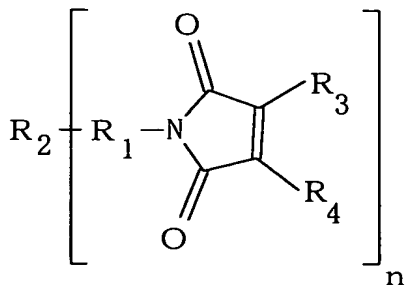
7. The method of manufacturing a photo-alignment layer

according to claim 5, wherein the maleimide compound is a compound represented by the general formula:



wherein R<sub>1</sub> represents an alkylene group having 1 to 30 carbon atoms, a cycloalkylene group having 3 to 12 carbon atoms, or a group in which these 2 to 5 groups are combined via a single bond, an ester bond, an ether bond or a urethane bond; R<sub>2</sub> represents a photo-alignment moiety selected from the group consisting of benzophenone group, cinnamoyl group, chalcone group and coumarin group; and R<sub>3</sub> and R<sub>4</sub> each independently represents a hydrogen atom, an alkyl group having 1 to 8 carbon atoms, a phenyl group, or a halogen atom.

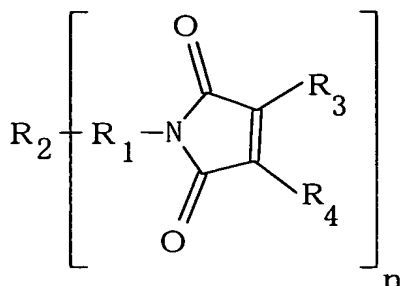
8. The method of manufacturing a photo-alignment layer according to claim 6, wherein the maleimide compound is a compound represented by the general formula:



wherein R<sub>1</sub> represents an alkylene group having 1 to 30 carbon atoms, a cycloalkylene group having 3 to 12 carbon atoms, or a group in which these 2 to 5 groups are combined via a single bond, an ester bond, an ether bond or a urethane bond; R<sub>2</sub> represents a photo-alignment moiety selected from the group consisting of benzophenone group, cinnamoyl group, chalcone group and coumarin group; and R<sub>3</sub> and R<sub>4</sub> each independently represents a hydrogen atom, an alkyl group having 1 to 8 carbon atoms, a phenyl group, or a halogen atom.

9. A liquid crystal display device having a structure comprising two substrates each having an alignment layer on its interior surface and liquid crystals interposed between the two substrates, wherein the alignment layer is a photo-alignment layer which comprises a polymer of a polymerizable monomer having at least one photo-alignment moiety, which carries out a photo-alignment function by the photo dimerization reaction, and at least two polymerizable maleimide groups per molecule, and also has the photo-alignment function carried out by photo dimerization of the photo-alignment moiety and a crosslinked structure formed by polymerization of the polymerizable maleimide group.

10. The liquid crystal display device according to claim 9, wherein the maleimide compound is a compound represented by the general formula:



wherein  $R_1$  represents an alkylene group having 1 to 30 carbon atoms, a cycloalkylene group having 3 to 12 carbon atoms, or a group in which these 2 to 5 groups are combined via a single bond, an ester bond, an ether bond or a urethane bond;  $R_2$  represents a photo-alignment moiety selected from the group consisting of benzophenone group, cinnamoyl group, chalcone group and coumarin group; and  $R_3$  and  $R_4$  each independently represents a hydrogen atom, an alkyl group having 1 to 8 carbon atoms, a phenyl group, or a halogen atom.

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